

Claims 1, 4 and 7 have been amended; claims 4-7 and 14-21 have been restricted. Because the examiner has indicated "the right to rejoin the process claims if the product claims are found to be allowable," applicants have not canceled claims 4-7 and 14-21. Thus, claims 1-21 remain pending although only claims 1-3 and 8-13 are discussed below with respect to the § 102(e) rejection.

Claims 1-3 and 8-13 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. The office action states that the examiner is unclear if the monomer units "c"- "f" contain ethylene backbone units or methylene backbone units. Applicants respectfully submit that the formulas of all claims are clear. Three valences for each carbon atom are shown and, as it is known in the art, the remaining fourth valence would be filled by a hydrogen atom, if not indicated differently in the description of the formula. However, a hydrogen atom has been added for the monomer units "c"- "f" to provide a response to the rejection. Applicants respectfully submit that the amendments to the formulas are not necessary. Because of the possibility that the process claims may be rejoined in the case, process claims 4 and 7 have also been amended accordingly. Additional language to each independent claim has also been added for purposes of clarity. Accordingly, applicants respectfully submit that all claims are now in full compliance with 35 U.S.C. § 112, second paragraph.

Claims 1-3 and 8-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 and 9-14 of co-pending application serial number 09/862,199. In response, applicants submit a terminal disclaimer herewith to traverse this rejection.

Finally, the Patent Office rejects claims 1-3 and 8-13 under 35 U.S.C. § 102(e) as being anticipated by co-pending application serial number 09/862,199. However, applicants respectfully submit that the '199 application is not prior art under 35 U.S.C. § 102(e). Specifically, the perfected priority date of the present application is June 21, 2000. The '199 application was not filed prior to June 21, 2000 but, instead, was filed in the United States on May 21, 2001. Thus, the '199 application was not "filed in the United States before the invention by the applicant" under either parts (1) or (2) of 35 U.S.C. § 102(e). Thus, the '199 application is not prior art under 35 U.S.C. § 102(e) and the rejection under this statute is improper and should be withdrawn.

An early action indicating the allowability of the present application is respectfully solicited.

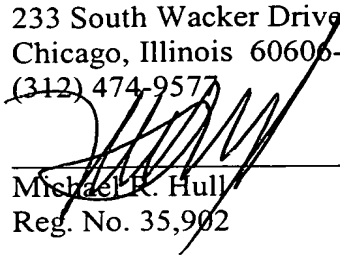
The Commissioner is authorized to charge any fee deficiency required by this paper, or credit any overpayment, to Deposit Account No. 13-2855.

Respectfully submitted,

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February 19, 2003

By:



Michael R. Hull
Reg. No. 35,902

VERSION WITH MARKINGS TO SHOW CHANGES

In the Specification:

Please replace the paragraph beginning on page 8, line 14, with the following rewritten paragraph:

--Yet another aspect [provides] is to provide a process for forming a photoresist pattern, as shown in Fig. 1, comprising the steps of:

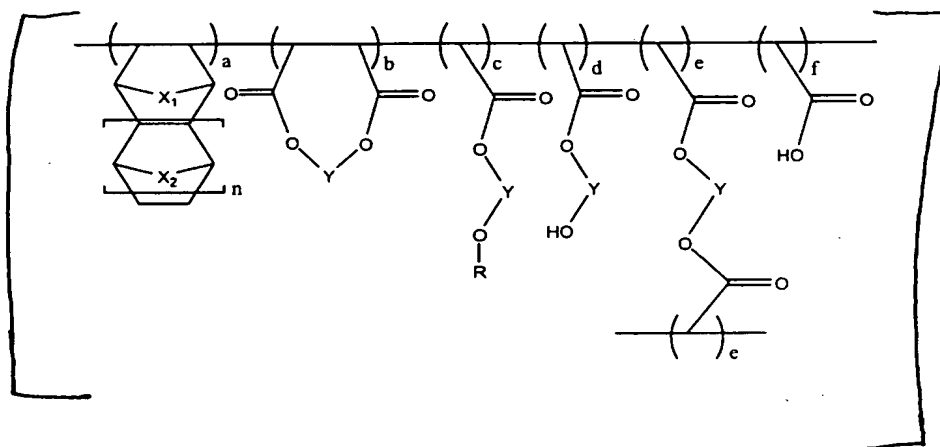
- (a) coating a photoresist composition on a substrate of a semiconductor element to form a photoresist film;
- (b) selectively exposing said photoresist film using a light source (see the first drawing in Fig. 1);
- (c) applying silylating agent to the resultant to produce a silylated layer on the exposed portion of said exposed photoresist film (see the second drawing in Fig. 1); and
- (d) etching the non-exposed portion photoresist film using the silylated layer as an etching mask (see the third and fourth drawings in Fig. 1).--

In the Claims:

Please amend claims 1, 4 and 7, as follows:

1. (Amended) A photoresist polymer comprising a repeating unit of following formula 1:

Formula 1



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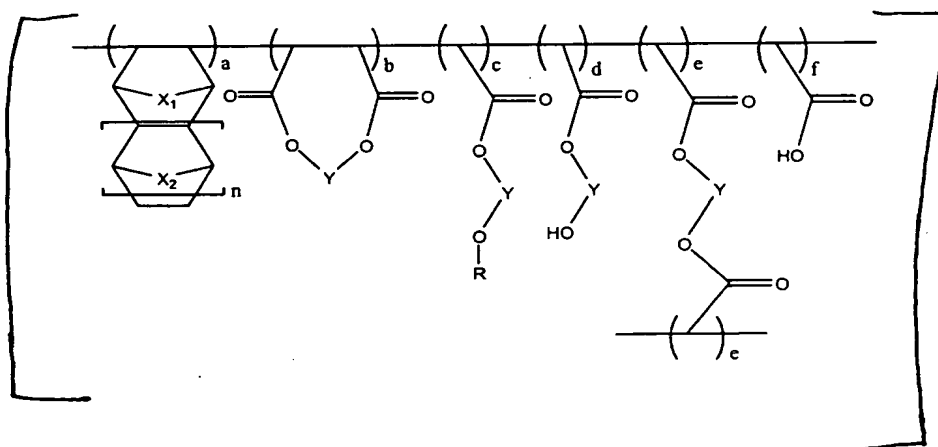
- (a) coating a photoresist composition on a substrate of a semiconductor element to form a photoresist film;
- (b) selectively exposing said photoresist film using a light source (see the first drawing in Fig. 1);
- (c) applying silylating agent to the resultant to produce a silylated layer on the exposed portion of said exposed photoresist film (see the second drawing in Fig. 1); and
- (d) etching the non-exposed portion photoresist film using the silylated layer as an etching mask (see the third and fourth drawings in Fig. 1).--

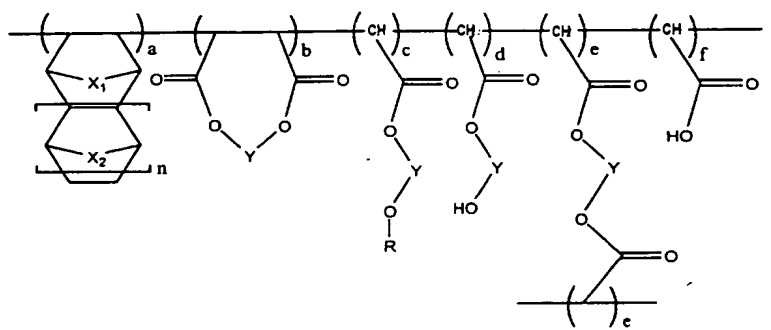
In the Claims:

Please amend claims 1, 4 and 7, as follows:

1. (Amended) A photoresist polymer comprising a repeating unit of following formula 1:

Formula 1





wherein, X_1 and X_2 are independently selected from the group consisting of CH_2 , CH_2CH_2 , O and S;

Y is C_1 - C_{10} alkylene or alkylene comprising an ether linkage;

R is an acid labile protecting group;

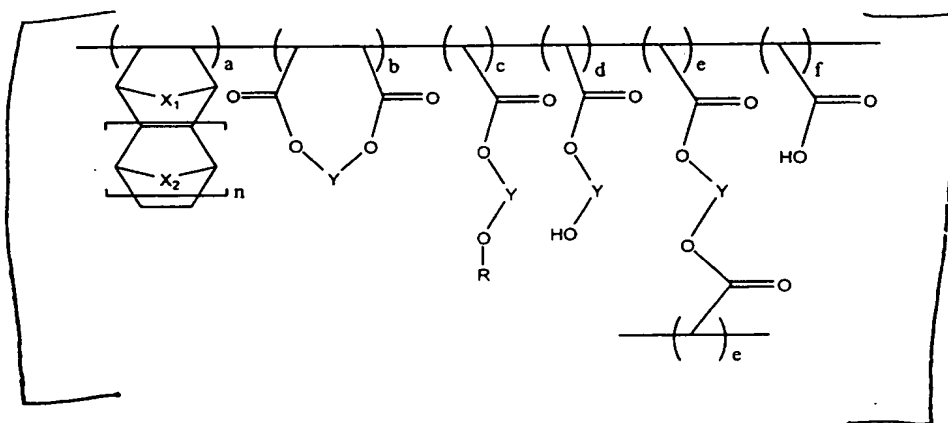
n is an integer from 0 to 2; and

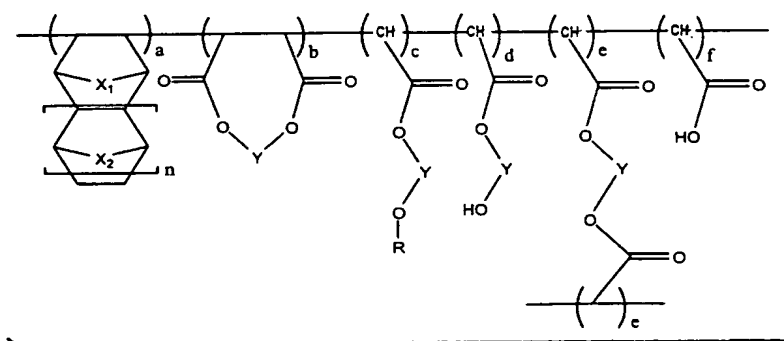
a : b : c : d : e : f is in the range of 20-40mol% : 0-20mol% : 20-70mol% : 0-30mol% : 0-20mol% : 0-20mol%.

4. (Amended) A process for preparing a photoresist polymer comprising:

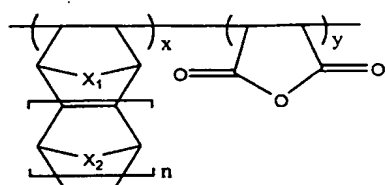
- (a) polymerizing a compound of Formula 5 with maleic anhydride to obtain a polymer of Formula 2;
- (b) reacting the polymer of Formula 2 with a diol compound of Formula 4 to obtain a polymer of Formula 3; and
- (c) reacting the polymer of Formula 3 with a compound having an acid labile protecting group to obtain a polymer of Formula 1 where a hydroxyl group is partially protected.

Formula 1

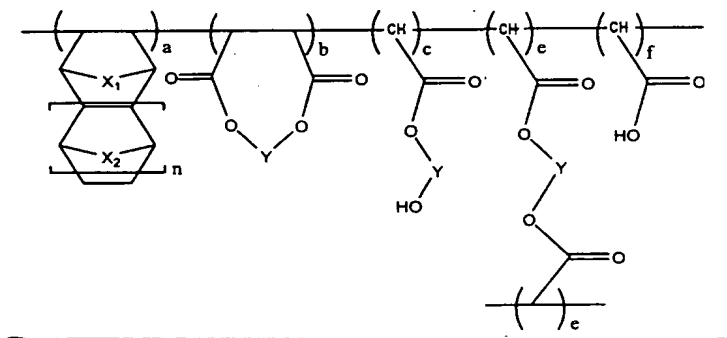
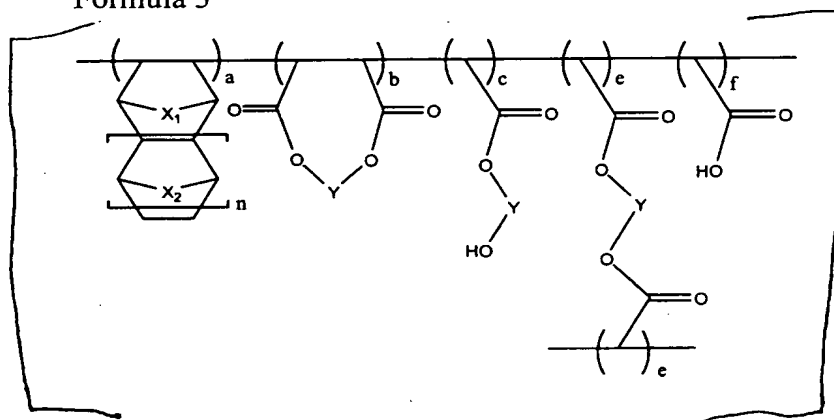




Formula 2

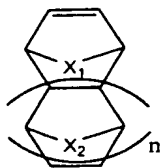


Formula 3



Formula 4
OH-Y-OH

Formula 5



wherein, X_1 and X_2 are independently CH_2 , CH_2CH_2 , O or S;

Y is C_1 - C_{10} alkylene or alkylene comprising an ether linkage;

R is an acid labile protecting group;

n is an integer from 0 to 2;

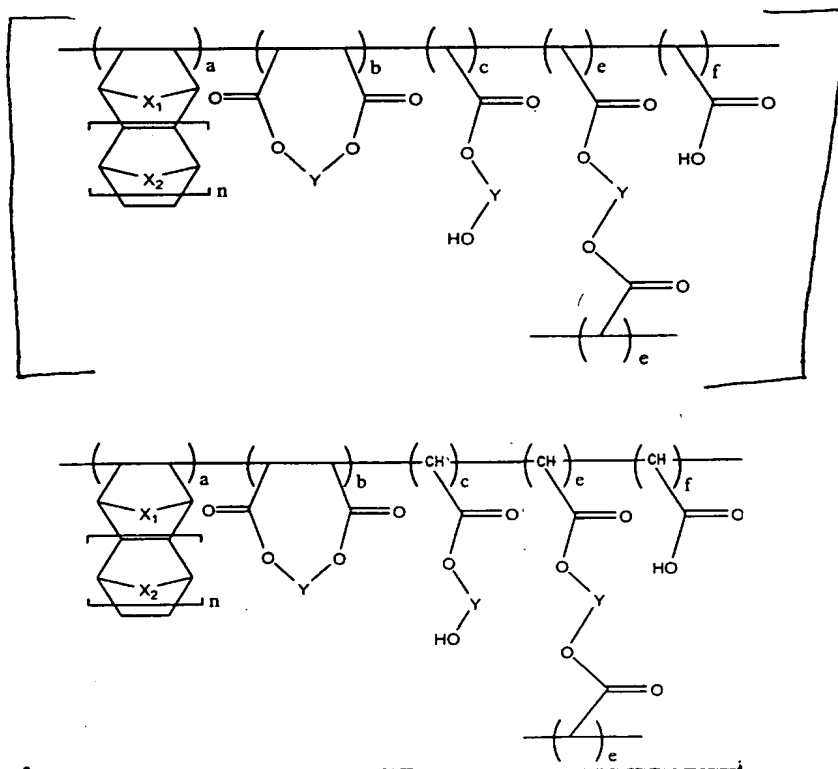
in Formula 1, a : b : c : d : e : f is in the range of 20-40mol% : 0-20mol% : 20-70mol% : 0-30mol% : 0-20mol% : 0-20mol%;

in Formula 2, x : y is in the range of 20-40mol% : 60-80mol%; and

in Formula 3, a : b : c : e : f is in the range of 20-40mol% : 0-20mol% : 20-80mol% : 0-20mol% : 0-20mol%.

7. (Amended) An intermediate compound represented by following Formula 3, which is used to prepare the repeating unit of claim 1.

Formula 3



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wherein, X_1 and X_2 are independently CH_2 , CH_2CH_2 , O or S;

Y is C_1 - C_{10} alkylene or alkylene comprising an ether linkage;

n is an integer from 0 to 2; and

a : b : c : e : f is in the range of 20-40mol% : 0-20mol% : 20-80mol% : 0-20mol% : 0-20mol%.